

California Energy Commission

2006 Heat Storm Workshop

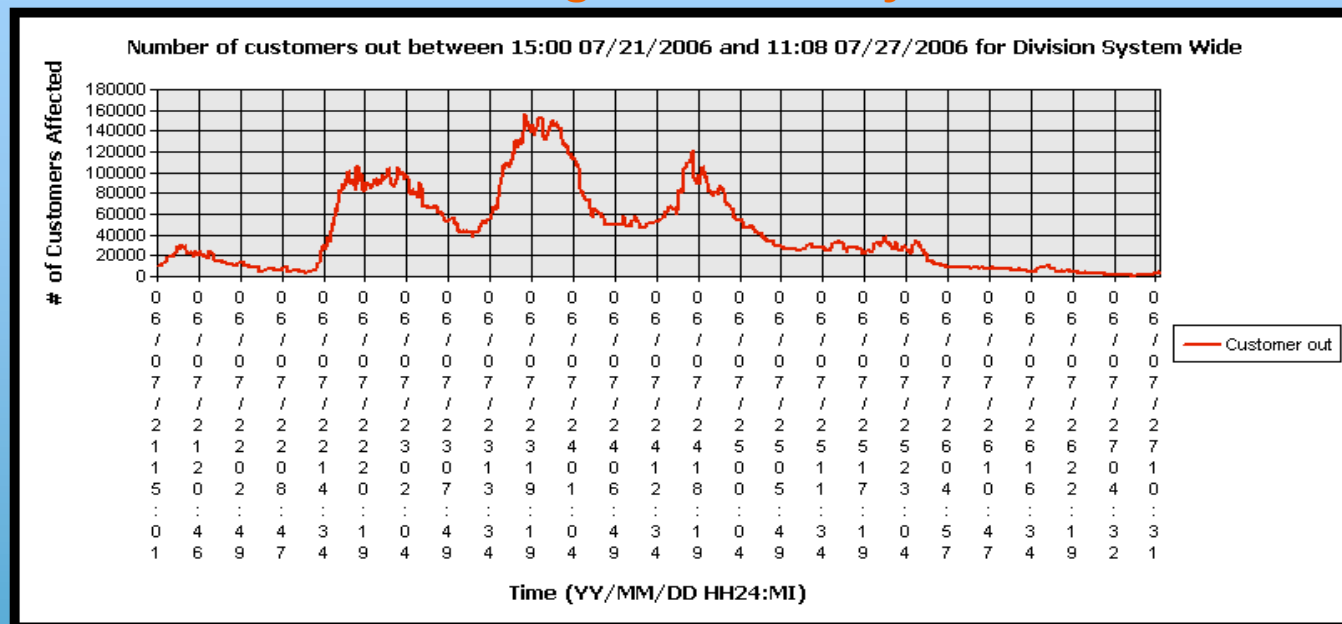
PG&E's Perspective

August 29, 2006

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Senior Director
Asset Investment Planning

Impact on PG&E's Customers

Event Outage Trend Analysis

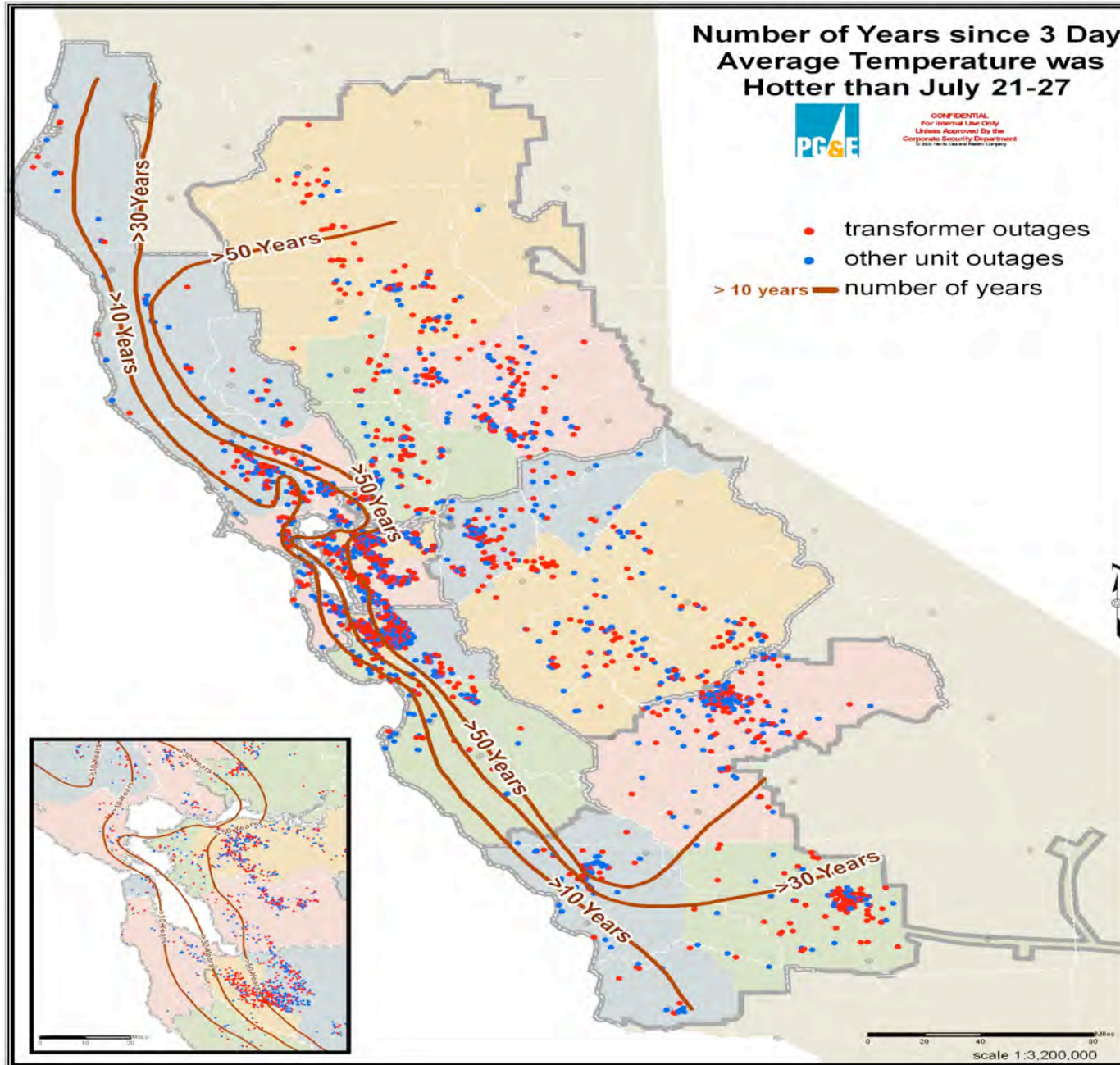


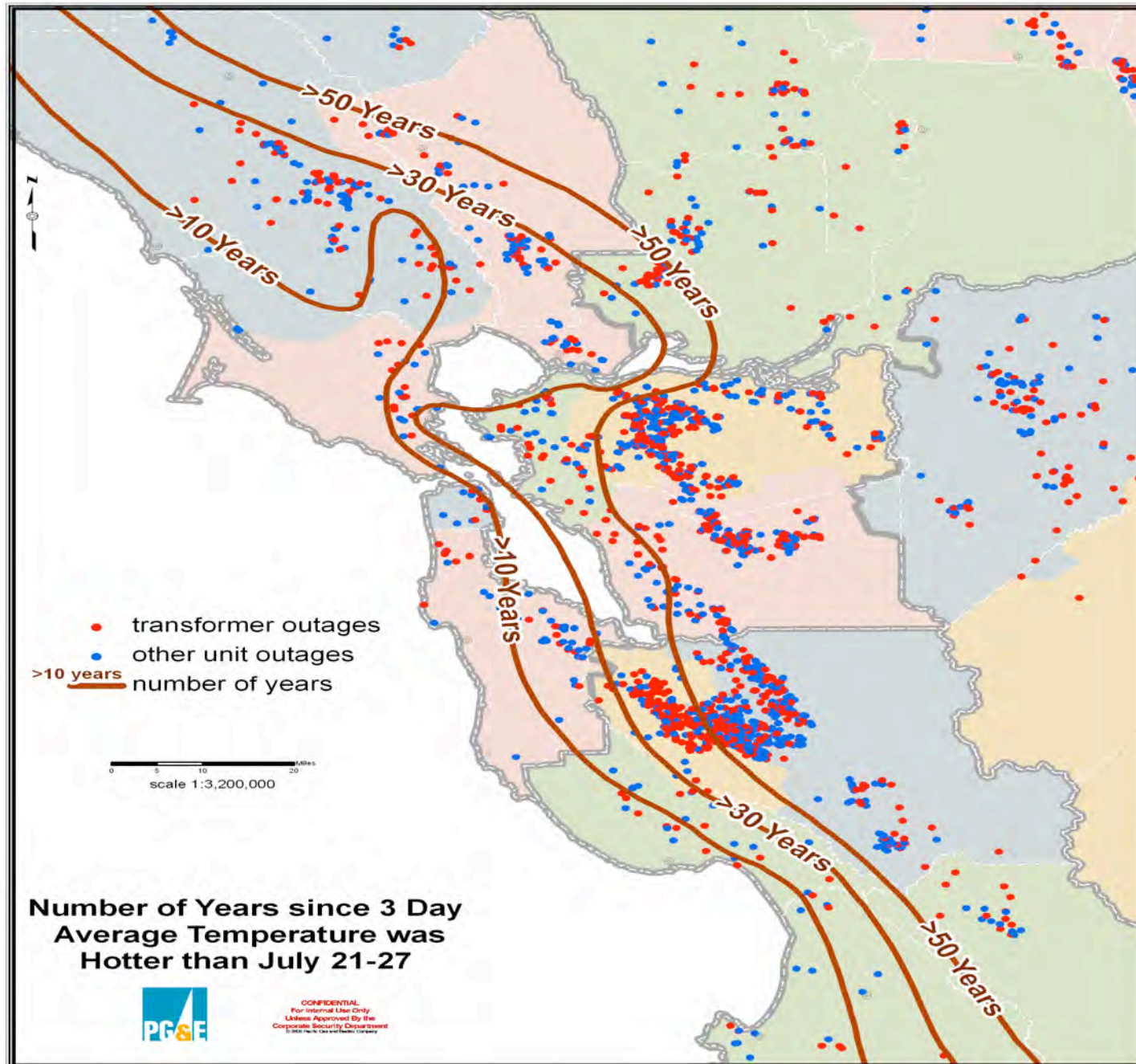
Number of Years since 3 Day Average Temperature was Hotter than July 21-27



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- transformer outages
- other unit outages
- > 10 years — number of years





Transmission & Distribution System Impacts

- Over 13,000 individual locations requiring investigation
- 6 substation equipment-related outages (21,000 customers)
- 3 transmission system outages resulting in substantial outages due to lightening (10,000 customers)
- 1,400 Distribution transformers were replaced – efforts ongoing

Age Distribution of Failed Transformers

0-10 Years	10-20 Years	20-30 Years	30-40 Years	40+ Years
20%	21%	20%	22%	16%



Workshop Questions

Transmission Planning

- Bulk system (500 kV) planned using 1 in 5 load forecast
- Local system planned using 1 in 10 forecast
- CEC load forecasts are the drivers

Equipment Capabilities

- Capabilities are driven by ambient conditions and customer behaviors (load factor)

Investment Balance

- Proactive replacement is more effective
- Replacement should be based on condition
- Condition monitoring on the distribution system is extremely complex